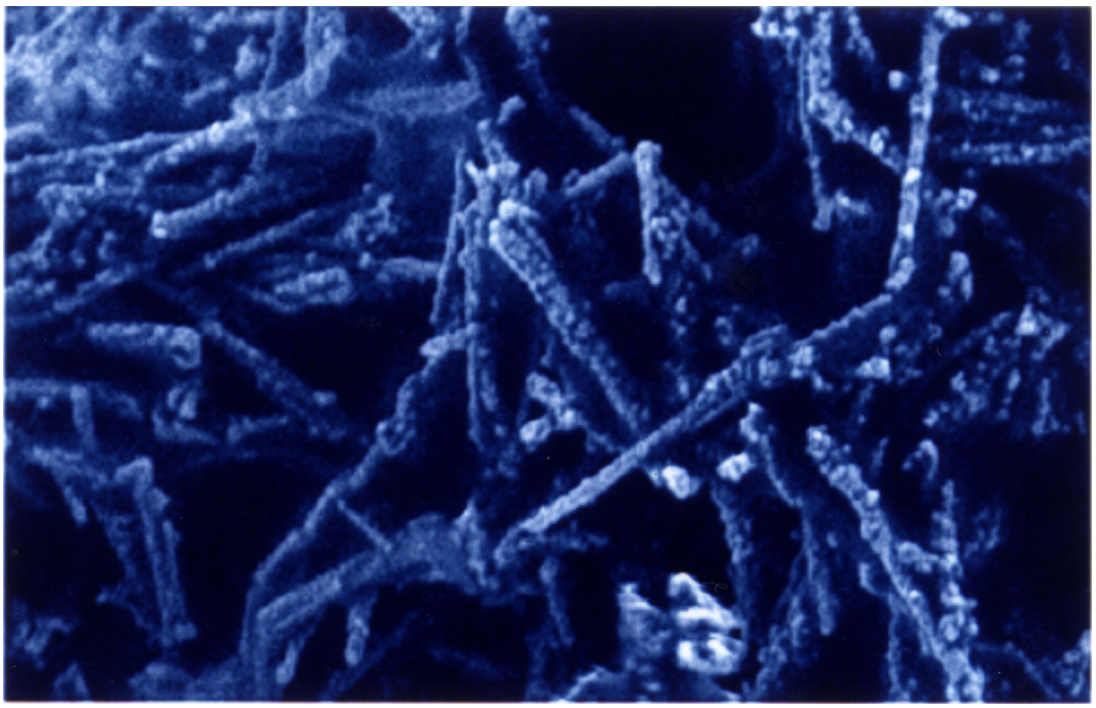
TUBULES



The microstructures program at the Naval Research Laboratory (NRL) is concerned with the formation and application of small objects with unique sizes and shapes. Biological molecules self-organize to form templates—hollow cylinders, monomolecular films, and nanodimensional particles that can be plated with metal or organic coats to yield micron-sized objects with useful electrical, mechanical and chemical properties. Products of this research include on-demand chemical delivery systems, dielectric materials to control electromagnetic interference, and enzymatic or catalytic materials. Tubules, NRL-developed lipid systems that form hollow cylinders, are an example with exciting technological potential in the area of controlled encapsulation and release of chemical and biological materials for environmental and industrial applications, and in the development of high permittivity composites.

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